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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,899	07/12/2001	Paul Wolejko	SAA-0055	2016

23569	7590	03/06/2006

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EXAMINER
CHANG, JUNGWON

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 November 2005_.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _39-61_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _39-61_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

1.   This Action is in response to Amendment filed on 11/17/05, which has been fully

considered.

2.   Claims 39-61 are presented for examination.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   **Claims 52-54, 56, 57, 59 and 60** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Dummermuth (US 6,073,053), hereinafter Dummermuth in view of

Vasko et al. (US 6,909,923), hereinafter Vasko.

5.   Dummermuth is cited by the Examiner in a previous Office Action.

6.   As for claim 52, Dummermuth discloses a control system comprising:

an input module structured to respond to a condition by transmitting a

representative signal (optical sensor 26, Fig. 1.; col. 3, lines 27-48); and

an output module (central processor 12, I/O rack 16, Fig. 1) operably coupled to

the input module, the output module including a reflex function (I/O card 18, Fig. 2)

structured to produce a state signal (output signal 29, Figs. 1 and 3; col. 3, lines 7-

14) in response to receiving the representative signal from the input module, the

output module being structured to execute the reflex function (col. 2, lines 19-24).

7.   Dummermuth does not specifically disclose without requiring an enablement

signal from a controller. However, Vasko discloses without requiring an enablement

signal from a controller (col. 8, lines 6-12, "allows direct communication between the

input module 14 and the output module 16 without the intervening controller 12 or for

systems without controllers 12"). It would have been obvious to one of ordinary skill in

the art at the time of the invention to modify Dummermuth by without requiring an

enablement signal from a controller, in order to direct communication between the input

module and the output module, as taught by Vasko (col. 8, lines 6-12).

8.   As for claim 53, Dummermuth discloses the control system as defined in claim

52, further comprising the controller operably coupled to the input module and the

output module (Figs. 1 and 2).

9.   As for claim 54, Dummermuth discloses the control system as defined in claim

53, further comprising a configuration tool operably coupled to the output module, the

configuration tool being structured to configure the reflex function (col. 2, lines 29-38;

col. 4, lines 16-19).

10.   As for claim 56, Dummermuth discloses the control system as defined in claim

52, wherein the reflex function is at least one of a Boolean logic function, a comparison

function, a counter function, a timer function, and an edge detection function (col. 2,

lines 29-31).

11.   As for claim 57, Dummermuth discloses the control system as defined in claim

52, wherein the output module is coupled to the input module by a network (Figs. 1 and

2).

12.   As for claim 59, Dummermuth discloses the control system as defined in claim

52, wherein the first reflex function is specified in an object dictionary (memory 52 and

54, Fig. 2; col. 3, line 65 – col. 4, line 7).

13.   As for claim 60, Dummermuth discloses the control system as defined in claim

59, wherein the object dictionary is embedded within a master scanner (central

processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7).

14.   **Claims 39-42, 44, 46, 47, 49, 50 and 55** are rejected under 35 U.S.C. 103(a) as

being unpatentable over Dummermuth (US 6,073,053), hereinafter Dummermuth, in

view of McLaughlin et al. (US 5,988,847), hereinafter McLaughlin, and Vasko et al. (US

6,909,923), hereinafter Vasko.

15.   McLaughlin is cited by the Examiner in a previous Office Action.

16.   As for claim 39, Dummermuth discloses a control system comprising:

an input module structured to respond to a condition by transmitting a

representative signal (col. 3, lines 27-48; optical sensor 26, Fig. 1); and

an output module (central processor 12, I/O rack 16, Fig. 1) operably coupled to

the input module, the output module including *circuitry* (I/O card 18, Fig. 2)

configurable with a first reflex function at a first time and a second reflex function at a

second time, the first reflex function being structured to produce a state signal

(output signal 29, Figs. 1 and 3; col. 3, lines 7-14), in response to receiving the

representative signal from the input module (col. 2, lines 29-31; col. 4, lines 16-19).

17.   Although Dummermuth teaches programmable and configurable circuitry,

Dummermuth does not explicitly disclose that the circuitry may comprise firmware. It is

well-known and obvious to one of ordinary skill in the art that firmware, hardware, and

software perform equivalent functions and may be substituted for each other or used in

combination, as taught explicitly by McLaughlin (col. 4, line 65 – col. 5, line 8). It would

have been obvious to one of ordinary skill in the art at the time of the invention to modify

McLaughlin by using firmware in order to provide an easily programmable circuit.

Dummermuth does not specifically disclose without requiring an enablement signal from

a controller. However, Vasko discloses without requiring an enablement signal from a controller (col. 8, lines 6-12, "allows direct communication between the input module 14 and the output module 16 without the intervening controller 12 or for systems without controllers 12"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by without requiring an enablement signal from a controller, in order to direct communication between the input module and the output module, as taught by Vasko (col. 8, lines 6-12).

18.   As for claim 40, Dummermuth discloses a control system as defined in claim 39, wherein:

the first reflex function comprises at least one of a Boolean logic function, a comparison function, a counter function, a timer function, and an edge detection function (col. 2, lines 29-31) and

the second reflex function comprises at least one of a Boolean logic function, a comparison function, a counter function, a timer function, and an edge detection function, wherein the first reflex function is different than the second reflex function (col. 2, lines 29-31).

19.   As for claim 41, Dummermuth discloses the control system as defined in claim 39, further comprising a computer based tool to configure the firmware with one of the first reflex function and the second reflex function (col. 2, lines 29-38; col. 4, lines 16-19).

20.   As for claim 42, Dummermuth discloses the control system as defined in claim 39, wherein the output module is coupled to the input module by a bus (Fig. 2; col. 3, lines 49-51).

21.   As for claim 44, Dummermuth discloses the control system as defined in claim 39, wherein the output module is coupled to the input module by a network (Figs. 1 and 2).

22.   As for claim 46, Dummermuth discloses the control system as defined in claim 39, further comprising a master scanner operatively coupled to the input module and the output module (col. 4, lines 13-16).

23.   As for claim 47, Dummermuth discloses the control system as defined in claim 39, wherein the master scanner comprises a programmable logic controller (central processor 12, Fig. 2).

24.   As for claim 49, Dummermuth discloses the control system as defined in claim 39, wherein the first reflex function is specified in an object dictionary (memory 52 and 54, Fig. 2; col. 3, line 65 – col. 4, line 7).

25.   As for claim 50, Dummermuth discloses the control system as defined in claim

39, wherein the object dictionary is embedded within a master scanner (central processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7).

26.   As for claim 55, although Dummermuth teaches programmable and configurable circuitry, Dummermuth does not explicitly disclose that the circuitry may comprise firmware. It is well-known and obvious to one of ordinary skill in the art that firmware, hardware, and software perform equivalent functions and may be substituted for each other or used in combination, as taught explicitly by McLaughlin (col. 4, line 65 – col. 5, line 8). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify McLaughlin by using firmware in order to provide an easily programmable circuit.

27.   **Claims 43, 45, 48, and 51** are rejected under 35 U.S.C. 103(a) as being obvious over Dummermuth, McLaughlin, Vasko, further in view of Edwards et al (US 5,938,754) (hereinafter Edwards).

28.   Edwards is cited by the Examiner in a previous Office Action.

29.   As for claims 43 and 45, Dummermuth, McLaughlin and Vasko do not specifically teach the use of CANopen protocol. Edwards teaches the use of CANopen protocol in industrial manufacturing applications for detection and correction of transmission errors caused by electromagnetic interference (col. 2, lines 23-38). It would have been

obvious to one of ordinary skill in the art at the time of the invention to modify

Dummermuth, McLaughlin and Vasko by using CANopen protocol over either a network

or a bus because this would provide an easily configurable system and allow for

detection and correction of transmission errors caused by electromagnetic interference,

as taught by Edwards above.

30.   As for claim 48, Dummermuth, McLaughlin and Vasko do not specifically disclose

a reflexive control system wherein the master scanner is a field bus coupler. Edwards

teaches the use of a field bus and a field bus coupler in an industrial control system for

easily configuring a system and for detection and correction of transmission errors

caused by electromagnetic interference (col. 1, lines 9-22; field bus coupler is inherent

for coupling with the field bus). It would have been obvious to one of ordinary skill in the

art at the time of the invention to modify Dummermuth, McLaughlin and Vasko by using

a field bus coupler as the master scanner in order to employ a CAN network because

this would provide the advantages of an easily configurable system and detection and

correction of transmission errors caused by electromagnetic interference, as taught by

Edwards above.

31.   As for claim 51, Dummermuth, McLaughlin and Vasko do not specifically disclose

assigning first and second addresses to the input and output modules, respectively.

Edwards teaches assigning addresses to all devices connected to a network for use in a

CANopen network which provides the advantages of easily configuring a system and for

detection and correction of transmission errors caused by electromagnetic interference

(col. 1, lines 9-22; field bus coupler is inherent for coupling with the field bus). It would

have been obvious to one of ordinary skill in the art at the time of the invention to modify

Dummermuth, McLaughlin and Vasko by assigning first and second addresses to the

input and output modules, respectively, in order to employ a CAN network which has

the advantages of an easily configurable system and detection and correction of

transmission errors caused by electromagnetic interference, as taught by Edwards.

32.   **Claims 58 and 61** are rejected under 35 U.S.C. 103(a) as being obvious over

Dummermuth and Vasko, in view of Edwards.

33.   As for claim 58, Dummermuth and Vasko do not specifically teach the use of

CANopen protocol. Edwards teaches the use of CANopen protocol in industrial

manufacturing applications for detection and correction of transmission errors caused

by electromagnetic interference (col. 2, lines 23-38). It would have been obvious to one

of ordinary skill in the art at the time of the invention to modify Dummermuth and Vasko

by using CANopen protocol over either a network or a bus because this would provide

an easily configurable system and allow for detection and correction of transmission

errors caused by electromagnetic interference, as taught by Edwards above.

34.   As for claim 61, Dummermuth and Vasko do not specifically disclose assigning

first and second addresses to the input and output modules, respectively. Edwards

teaches assigning addresses to all devices connected to a network for use in a

CANopen network which provides the advantages of easily configuring a system and for

detection and correction of transmission errors caused by electromagnetic interference

(col. 1, lines 9-22; field bus coupler is inherent for coupling with the field bus). It would

have been obvious to one of ordinary skill in the art at the time of the invention to modify

Dummermuth and Vasko by assigning first and second addresses to the input and

output modules, respectively, in order to employ a CAN network which has the

advantages of an easily configurable system and detection and correction of

transmission errors caused by electromagnetic interference, as taught by Edwards.

Response to Arguments

35.   Applicant's arguments with respect to claims 39-61 have been considered but are

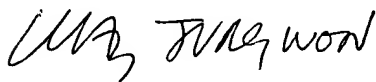moot in view of the new ground(s) of rejection.

36.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure:

Vandesteeg et al, patent 6,631,476 discloses a method and system for allowing direct

communication between the input module and the output module without a controller.

37.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jungwon Chang whose telephone number is 571-272-

3960. The examiner can normally be reached on 9:30-6:00 (Monday-Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John A Follansbee can be reached on 571-272-3964. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Jungwon Chang
March 3, 2006